

## COMPACT SYSTEM MODULE WITH BUILT-IN THERMOELECTRIC COOLING

### Abstract of the Disclosure

5           An improved integrated circuit package for providing built-in heating or cooling to a semiconductor chip is provided. The improved integrated circuit package provides increased operational bandwidth between different circuit devices, e.g. logic and memory chips. The improved integrated circuit package does not require changes in current CMOS processing techniques. The structure includes the  
10 use of a silicon interposer. The silicon interposer can consist of recycled rejected wafers from the front-end semiconductor processing. Micro-machined vias are formed through the silicon interposer. The micro-machined vias include electrical contacts which couple various integrated circuit devices located on the opposing surfaces of the silicon interposer. The packaging includes a Peltier element.